

REMARKS

Initially, Applicants would like to express appreciation to the Examiner for the detailed Final Official Action provided.

Upon entry of the above amendment, claims 1 and 6 will have been amended. Accordingly, claims 1 and 6-22 are currently pending. Applicants respectfully request reconsideration of the outstanding rejections and allowance of claims 1 and 6-22 in the present application. Such action is respectfully requested and is now believed to be appropriate and proper.

Claim 1 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over JP (5-90835).

Although Applicants do not necessarily agree with the Examiner's rejection of the claim on this ground, nevertheless, Applicants have amended independent claim 1 to clearly obviate the above-noted ground of rejection in order to expedite prosecution of the present application. In this regard, Applicants note that JP '835 fails to teach or suggest the subject matter claimed in amended claim 1. In particular, claim 1, as amended, sets forth a contact for a connector including, inter alia, a diffusion preventing area "wherein the diffusion preventing area has the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel". This amendment is fully supported by the specification, including the claims and drawings, and no prohibited new matter has been added. In this regard, support for this amendment may be found at least in the

specification on page 20, lines 1-3, and in figure 14. In particular, the specification, on page 20, lines 1-3, discloses that “the energy received from the laser beams L varies from place to place corresponding to the overlap of the laser beams L”. Accordingly, in the present invention, the portions 9 may be formed where the nickel plating layer 7 is unsheathed by evaporating the gold plating layer 8 on the surface at the portions receiving higher energy from the laser beams L; and the metal alloy layer 8a of gold and nickel may be formed at the portions receiving lower energy from the laser beams L. See particularly figure 14.

Further, the specification on page 18, lines 11-15 discloses that “there is a high possibility that the material of the contact 1 such as copper is unsheathed due to the nickel plating layer as the foundation plating is removed further to removing the gold plating layer in the region where the center of the beam spot passes, since irradiation quantity of the energy is larger”. The specification on page 20, lines 3-8, discloses that “it is possible to form the portion 9 where the nickel plating layer 7 is unsheathed by evaporating the gold plating layer 8 on the surface at the portions receiving higher energy from the laser beams L, and to form the metal alloy layer 8a of gold and nickel at the portions receiving lower energy from the laser beams L, as shown in FIG. 14”. Accordingly, by the configuration of Applicants’ claimed invention, the nickel plating layer 7 as the foundation plating is rarely evaporated, so that it is possible to prevent the material of the contact 1 from being unsheathed” (Applicants’ specification, page 20, lines 8-10).

Accordingly, in view of the above noted descriptions and figure 14, in Applicants’ claimed invention, the diffusion preventing area may consist of a first layer, and at least one of three additional layers. In particular, the diffusion preventing area includes (1) the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of the gold or the metal alloy including gold, and one layer selected from the following: (2) a metal alloy layer

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formed of alloying gold and nickel; (3) a diffusion layer formed of diffusing a material except gold of the metal alloy including gold; and (4) a metal alloy layer which is formed of evaporation and removal of at least a part of the gold and alloying the remaining gold and nickel, as set forth in claims 1 and 6, as amended.

The JP 5-90835 document discloses a contact 1 including a soldering area 2, a contact surface 4, an intermediate portion 3 between the soldering area 2 and the contact surface 4. As described in paragraph [0012] of the translation, the contact surface 4 comprises gold; and the intermediate area 3 comprises nickel deposit with compounded PTFE. The nickel deposit with compounded PTFE is plated onto the contact 1. Further, the gold is plated onto the nickel deposit with compounded PTFE, at the location of the contact surface 4, only. JP 5-90835 fails to teach or suggest a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following*: a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Applicants submit that nothing in the applied prior art teaches or suggests the claimed combination including, *inter alia*, a diffusion preventing area “wherein the diffusion preventing area has the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel”, as set forth in claim 1, as amended.

Accordingly, Applicants submit that a factual basis for the rejection has not been established and thus a prima facie case of obviousness has not been established, and that rejection of claim 1, as amended, under 35 U.S.C. § 103(a) can only result from a review of Applicants' disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 1 under 35 U.S.C. § 103(a) over JP '835 is improper for all the above reasons and withdrawal thereof is respectfully requested.

Claims 1-5 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. (U.S. Patent No. 5,957,736).

The MORIUCHI et al. patent discloses a contact 1 including a nickel oxide layer portion 4, a terminal portion 2, and a contact portion 3. As described in column 4, lines 14-27, the nickel oxide layer portion 4 prevents wicking of the solder; and the contact portion 3 is plated with gold. Further, the MORIUCHI et al. device is formed by depositing plating on the terminal portion 2 with solder, plating the contact portion 3 with gold, and providing a layer of nickel on the contact. The layer of nickel is then oxidized to form the nickel oxide layer portion 4. Accordingly, MORIUCHI et al. fails to disclose plating gold onto the nickel deposit and then subsequently removing the plated gold at particular locations of the contact. It is noted that the nickel oxide layer portion 4 disclosed in MORIUCHI et al. includes nickel oxide. Clearly, MORIUCHI et al. does not disclose, teach or suggest a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following*: a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Applicants submit that

nothing in the applied prior art teaches or suggests the claimed combination including, inter alia, a diffusion preventing area “wherein the diffusion preventing area has the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel”, as set forth in claim 1, as amended.

Accordingly, Applicants submit that a factual basis for the rejection has not been established and thus a prima facie case of obviousness has not been established, and that rejection of claim 1, as amended, under 35 U.S.C. § 103(a) can only result from a review of Applicants’ disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 1 under 35 U.S.C. § 103(a) over MORIUCHI et al. is improper for all the above reasons and withdrawal thereof is respectfully requested.

Claims 6-16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over JP (5-90835) in view of JP 60-238489.

Although Applicants do not necessarily agree with the Examiner’s rejection of claim 6 on this ground, nevertheless, Applicants have amended independent claim 6 to clearly obviate the above noted ground of rejection in order to expedite prosecution of the present application. In this regard, Applicants note that JP 5-90835 and JP 60-238489 fail to teach or suggest the subject matter claimed in amended claim 6. In particular, claim 6, as amended, sets forth a manufacturing method of an element to be soldered including, inter alia, “forming a diffusion preventing area, which has the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, and at least one selected among a

metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remaining gold and nickel, and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams on the gold plating layer or the metal alloy plating layer including gold at a portion between the terminal portion and a portion not to be soldered in the air”.

As described above, JP 5-90835 fails to teach or suggest forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following:* a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Applicants submit that nothing in the applied prior art teaches or suggests the claimed combination including, *inter alia*, “forming a diffusion preventing area, which has the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remaining gold and nickel, and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams on the gold plating layer or the metal alloy plating layer including gold at a portion between the terminal portion and a portion not to be soldered in the air”, as set forth in claim 6, as amended.

JP 60-238489 fails to teach or suggest a method including forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following*: a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel, as recited in amended claim 6.

Therefore, the JP 60-238489 document fails to cure the deficiencies of the JP 5-90835 device, and even assuming, arguendo, that the teachings of JP 5-90835 and JP 60-238489 have been properly combined, Applicants' claimed manufacturing method of an element to be soldered would not have resulted from the combined teachings thereof.

Further, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claim 6 under 35 U.S.C. § 103(a) over JP 5-90835 in view of JP 60-238489. Thus, the only reason to combine the teachings of JP 5-90835 and JP 60-238489 results from a review of Applicants' disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 6 under 35 U.S.C. § 103(a) over JP 5-90835 in view of JP 60-238489 is improper for all the above reasons and withdrawal thereof is respectfully requested.

Claims 6-16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. in view of JP 60-238489.

As described above, MORIUCHI et al. fails to teach or suggest forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following*:

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a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Applicants submit that nothing in the applied prior art teaches or suggests the claimed combination including, inter alia, “forming a diffusion preventing area, which has the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remaining gold and nickel, and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams on the gold plating layer or the metal alloy plating layer including gold at a portion between the terminal portion and a portion not to be soldered in the air”, as set forth in claim 6, as amended.

JP 60-238489 fails to teach or suggest a method including forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following*: a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel, as recited in amended claim 6.

Therefore, the JP 60-238489 document fails to cure the deficiencies of the MORIUCHI et al. method, and even assuming, arguendo, that the teachings of MORIUCHI et al. and JP 60-

238489 have been properly combined, Applicants' claimed manufacturing method of an element to be soldered would not have resulted from the combined teachings thereof.

Further, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claim 6 under 35 U.S.C. § 103(a) over MORIUCHI et al. in view of JP 60-238489. Thus, the only reason to combine the teachings of MORIUCHI et al. and JP 60-238489 results from a review of Applicants' disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 6 under 35 U.S.C. § 103(a) over MORIUCHI et al. in view of JP 60-238489 is improper for all the above reasons and withdrawal thereof is respectfully requested.

Claims 6-22 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over JP '835 in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773).

As described above, JP '835 fails to teach or suggest forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following*: a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Applicants submit that nothing in the applied prior art teaches or suggests the claimed combination including, *inter alia*, "forming a diffusion preventing area, which has the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold

and alloying remaining gold and nickel, and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams on the gold plating layer or the metal alloy plating layer including gold at a portion between the terminal portion and a portion not to be soldered in the air”, as set forth in claim 6, as amended.

HASHIMOTO et al. fails to teach or suggest a method including forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following*: a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel, as recited in amended claim 6.

Therefore, the HASHIMOTO et al. document fails to cure the deficiencies of the JP ‘835 method, and even assuming, arguendo, that the teachings of JP ‘835. and HASHIMOTO et al. have been properly combined, Applicants’ claimed manufacturing method of an element to be soldered would not have resulted from the combined teachings thereof.

Further, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claim 6 under 35 U.S.C. § 103(a) over JP ‘835 in view of HASHIMOTO et al. Thus, the only reason to combine the teachings of JP ‘835 and HASHIMOTO et al. results from a review of Applicants’ disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 6 under 35 U.S.C. § 103(a) over JP ‘835 in view of HASHIMOTO et al. is improper for all the above reasons and withdrawal thereof is respectfully requested.

Claims 6-22 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773).

As described above, MORIUCHI et al. fails to teach or suggest forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following*: a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Applicants submit that nothing in the applied prior art teaches or suggests the claimed combination including, *inter alia*, “forming a diffusion preventing area, which has the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remaining gold and nickel, and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams on the gold plating layer or the metal alloy plating layer including gold at a portion between the terminal portion and a portion not to be soldered in the air”, as set forth in claim 6, as amended.

HASHIMOTO et al. fails to teach or suggest a method including forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following*: a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of

evaporation and removal of at least part of gold and alloying the remaining gold and nickel, as recited in amended claim 6.

Therefore, the HASHIMOTO et al. document fails to cure the deficiencies of the MORIUCHI et al. method, and even assuming, arguendo, that the teachings of MORIUCHI et al. and HASHIMOTO et al. have been properly combined, Applicants' claimed manufacturing method of an element to be soldered would not have resulted from the combined teachings thereof.

Further, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claim 6 under 35 U.S.C. § 103(a) over MORIUCHI et al. in view of HASHIMOTO et al. Thus, the only reason to combine the teachings of MORIUCHI et al. and HASHIMOTO et al. results from a review of Applicants' disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 6 under 35 U.S.C. § 103(a) over MORIUCHI et al. in view of HASHIMOTO et al. is improper for all the above reasons and withdrawal thereof is respectfully requested.

Applicants submit that dependent claims 7-21, which are at least patentable due to their dependency from claim 6 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record based on the additionally recited features.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections, and an early indication of the allowance of claims 1 and 6-22.

SUMMARY AND CONCLUSION

In view of the foregoing, it is submitted that the present amendment is proper for entry since it merely clarifies the language describing the diffusion preventing area layers, which is an

issue about which Applicants have already presented arguments and it is also submitted that none of the references of record, considered alone or in any proper combination thereof, anticipate or render obvious Applicants' invention as recited in claims 1 and 6-22. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Accordingly, consideration of the present amendment, reconsideration of the outstanding Final Official Action, and allowance of the present amendment and all of the claims therein are respectfully requested and now believed to be appropriate.

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so.

Any amendments to the claims which have been made in this amendment, which do not narrow the scope of the claims, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered cosmetic in nature, and to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should there be any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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